CLAIMS:

1. A method, comprising:

(a) transforming a received orthogonal frequency division multiplexed (OFDM) signal from a transmission channel into the frequency domain, the OFDM signal having been subject to a clipping function prior to transmission in order to reduce the peak-to-average power ratio (PAPR);

(b) recovering data symbols from the transformed OFDM signal, which include clipping noise;

(c) estimating the clipping noise in the frequency domain based on the data symbols; and

(d) subtracting the estimated clipping noise from the transformed OFDM signal.

2. The method of claim 1, further comprising repeating steps (a) through (d) more than one time in order to iteratively cancel the clipping noise.

3. The method of claim 2, wherein steps (a) through (d) are repeated only two times.

4. The method of claim 2, wherein steps (a) through (d) are repeated only three times.

5. The method of claim 1, wherein the step of recovering data symbols in the frequency domain from the OFDM signal includes de-mapping the transformed OFDM signal, de-interleaving the de-mapped signal, decoding the de-interleaved signal,

interleaving the decoded signal, and mapping the interleaved signal to obtain the data symbols.

6. The method of claim 5, wherein the step of estimating the clipping noise:

subjecting the data symbols to substantially the same clipping function to which the OFDM signal had been subject to prior to transmission;

attenuating the data symbols; and

subtracting the attenuated data symbols from the clipped data symbols to obtain the estimated clipping noise.

7. The method of claim 6, further comprising: multiplying the estimated clipping noise over each sub-carrier with complex channel gains, prior to subtracting the estimated clipping noise from the transformed OFDM signal.

8. The method of claim 1, wherein the clipping function is one of a deliberate clipping algorithm and a repeated clipping algorithm.

9. An apparatus, comprising:

a receiver operable to receive an orthogonal frequency division multiplexed (OFDM) signal from a transmission channel, the OFDM signal having been subject to a clipping function prior to transmission in order to reduce the peak-to-average power ratio (PAPR);

a frequency transform unit operable to transform the OFDM signal to the frequency domain;

a decoding unit operable to recover data symbols from the frequency domain OFDM signal, which include clipping noise;

a noise estimator operable to estimate the clipping noise in the frequency domain based on the data symbols; and

a difference circuit operable to subtract the estimated clipping noise from the transformed OFDM signal.

10. The apparatus of claim 9, wherein the receiver, the decoding unit, the noise estimator and the difference circuit operate iteratively in order to cancel the clipping noise.

11. The apparatus of claim 10, wherein only two iterative sequences are performed.

12. The apparatus of claim 10, wherein only three iterative sequences are performed.

13. The apparatus of claim 9, further comprising: means for de-mapping the transformed OFDM signal; means for de-interleaving the de-mapped signal; means for decoding the de-interleaved signal; means for interleaving the decoded signal; and means for mapping the interleaved signal to obtain the data symbols.

14. The apparatus of claim 13, wherein the noise estimator is operable to (i) subject the data symbols to substantially the same clipping function to which the OFDM signal had been subject to prior to transmission; (ii) attenuate the data symbols; and (iii) subtract the attenuated data symbols from the clipped data symbols to obtain the estimated clipping noise.

15. The apparatus of claim 14, further comprising a processing circuit operable to multiply the estimated clipping noise over each sub-carrier with complex channel gains, prior to subtracting the estimated clipping noise from the transformed OFDM signal.

16. The apparatus of claim 9, wherein the clipping function is one of a deliberate clipping algorithm and a repeated clipping algorithm.

17. An apparatus including a processor operating under the control of one or more software programs that cause the processor to carry out actions, comprising:

(a) transforming a received orthogonal frequency division multiplexed (OFDM) signal from a transmission channel into the frequency domain, the OFDM signal having been subject to a clipping function prior to transmission in order to reduce the peak-to-average power ratio (PAPR);

(b) recovering data symbols from the transformed OFDM signal, which include clipping noise;

(c) estimating the clipping noise in the frequency domain based on the data symbols; and

(d) subtracting the estimated clipping noise from the transformed OFDM signal.

18. The apparatus of claim 17, further comprising repeating steps (a) through (d) more than one time in order to iteratively cancel the clipping noise.

19. The apparatus of claim 18, wherein steps (a) through (d) are repeated only two times.

20. The apparatus of claim 18, wherein steps (a) through (d) are repeated only three times.

21. The apparatus of claim 17, wherein the step of recovering data symbols in the frequency domain from the OFDM signal includes de-mapping the transformed OFDM signal, de-interleaving the de-mapped signal, decoding the de-interleaved signal, interleaving the decoded signal, and mapping the interleaved signal to obtain the data symbols.

22. The apparatus of claim 21, wherein the step of estimating the clipping noise:

subjecting the data symbols to substantially the same clipping function to which the OFDM signal had been subject to prior to transmission;

attenuating the data symbols; and

subtracting the attenuated data symbols from the clipped data symbols to obtain the estimated clipping noise.

23. The apparatus of claim 22, further comprising: multiplying the estimated clipping noise over each sub-carrier with complex channel gains, prior to subtracting the estimated clipping noise from the transformed OFDM signal.

24. The apparatus of claim 17, wherein the clipping function is one of a deliberate clipping algorithm and a repeated clipping algorithm.

25. A storage medium containing one or more software programs that are operable to cause a processor executing the one or more software programs to carry out actions, comprising:

(a) transforming a received orthogonal frequency division multiplexed (OFDM) signal from a transmission channel into the frequency domain, the OFDM signal having been subject to a clipping function prior to transmission in order to reduce the peak-to-average power ratio (PAPR);

(b) recovering data symbols from the transformed OFDM signal, which include clipping noise;

(c) estimating the clipping noise in the frequency domain based on the data symbols; and

(d) subtracting the estimated clipping noise from the transformed OFDM signal.

26. The storage medium of claim 25, further comprising repeating steps (a) through (d) more than one time in order to iteratively cancel the clipping noise.

27. The storage medium of claim 26, wherein steps (a) through (d) are repeated only two times.

28. The storage medium of claim 26, wherein steps (a) through (d) are repeated only three times.

29. The storage medium of claim 25, wherein the step of recovering data symbols in the frequency domain from the OFDM signal includes de-mapping the transformed OFDM signal, de-interleaving the de-mapped signal, decoding the de-

interleaved signal, interleaving the decoded signal, and mapping the interleaved signal to obtain the data symbols.

30. The storage medium of claim 29, wherein the step of estimating the clipping noise:

subjecting the data symbols to substantially the same clipping function to which the OFDM signal had been subject to prior to transmission;

attenuating the data symbols; and

subtracting the attenuated data symbols from the clipped data symbols to obtain the estimated clipping noise.

31. The storage medium of claim 30, further comprising: multiplying the estimated clipping noise over each sub-carrier with complex channel gains, prior to subtracting the estimated clipping noise from the transformed OFDM signal.

32. The storage medium of claim 25, wherein the clipping function is one of a deliberate clipping algorithm and a repeated clipping algorithm.